

REMARKS

Claims 1-8 and 10-23 are currently pending in the present application. Claim 1 has been amended, and new claims 21-23 have been added, by the present amendment.

The rejection of claims 1-6 and 10-20 under 35 U.S.C. § 103(a) as being obvious over Hasegawa (EP 1252973) in view of Petroski (U.S. 2004/0018809) is respectfully traversed with respect to claims 1-6 and 10-23, as currently presented.

Amended claim 1 and new claim 21 recite an abrasive pad comprising an abrasive substrate and a light transmitting member fused to the abrasive substrate. Each of the abrasive substrate and the light transmitting member comprise a water-insoluble matrix material and a water-soluble substance dispersed in the water-insoluble matrix material. The water-insoluble matrix material of the abrasive substrate and the light transmitting member comprise a same polymer, namely 1,2-polybutadiene.

New claims 22 and 23 recite an abrasive pad comprising an abrasive substrate and a light transmitting member fused to the abrasive substrate. The abrasive substrate consists of a water-insoluble matrix material. The light transmitting member comprises a water-insoluble matrix material and a water-soluble substance dispersed in the water-insoluble matrix material. The water-insoluble matrix material of the abrasive substrate and the light transmitting member comprise a same polymer, namely 1,2-polybutadiene.

Applicants have discovered that by utilizing the same polymer for the water-insoluble matrix material in both the light transmitting material and the abrasive substrate, the light transmitting material is more firmly fused to the abrasive substrate of the abrasive pad of the present invention.

Hasegawa describes a polishing pad for a semiconductor wafer comprising a substrate and a light transmitting part fitted in the substrate. The light transmitting part comprises a

water-insoluble matrix material and water-soluble particles dispersed in the water-insoluble matrix material.

The polishing pad disclosed in Hasegawa differs from the abrasive pad of the present invention in that the light transmitting part of Hasegawa is *merely fitted* in the substrate (See e.g., 4. of [0008], [0055], [0057], Fig. 12-22 of [0085], [0091] and [0092] of Example 2), as opposed to being *firmly bonded by fusion* to the substrate as presently claimed. Hasegawa also fails to describe that the substrate and the light transmitting part must be composed of the *same polymer*, namely *1,2-polybutadiene*, as required in amended claim 1 and new claims 21-23. The aforementioned distinctions are exemplified in Example 2 on page 11 of Hasegawa, which discloses a polishing pad comprising a *polyurethane* (polycarbamate) substrate having a *1,2-polybutadiene* light transmitting part *fitted* therein. Furthermore, Hasegawa fails to describe that the abrasive substrate *consists of* a water-insoluble material (i.e., having no water-soluble particles dispersed therein), as claimed in new claim 22.

Petroski describes a polishing pad for a semiconductor wafer comprising a porous fibrous matrix of cellulose fibers that are impregnated and bound together with a phenolic thermoset resin (See e.g., [0020]). The polishing pad of Petroski further comprises a transparent window comprising a transparent polymer that is interconnected to the porous fibrous matrix by physical diffusion, whereby the transparent polymer, which is flowing due to being heated to a temperature at or above the melting point and/or softening point thereof, is injected into interstitial spaces located between the cellulose fibers of the porous fibrous matrix (See e.g., [0022], [0025], and Figures 3A, 3B, and 5). The transparent polymer of Petroski is selected from polypropylene (PP), acrylonitrile-butadiene-styrene (ABS), polycarbonate (PC), acrylic-styrene-acrylonitrile (ASA), polyphenylene ether (PPE), and polyetherimide (PEI) (See e.g., [0021]).

As previously discussed, the thermoset resin of Petroski is a *phenolic resin*, whereas the transparent polymer of Petroski is selected from *PP, ABS, PC, ASA, PPE, and PEI*. Therefore, unlike the abrasive substrate and the light transmitting member of the present invention, which are composed of the *same polymer*, namely *1,2-polybutadiene*, the thermoset resin and the transparent polymer of Petroski are composed of *different polymers*. In addition, the transparent polymer of Petroski is *merely interconnected* to the porous fibrous matrix by *physical diffusion* of the transparent polymer into interstitial spaces located between the cellulose fibers of the porous fibrous matrix (See e.g., [0022], [0025], Figures 3B and 5). In contrast, Applicants have discovered that by utilizing the same polymer for both the light transmitting material and the abrasive substrate, the light transmitting material has the advantage of being *more firmly bonded by fusion* to the abrasive substrate of the abrasive pad of the present invention. Petroski fails to describe that the thermoset resin and the transparent polymer are composed of the *same polymer*, namely *1,2-polybutadiene*, as recited in amended claim 1 and new claims 21-23. As a result, Petroski necessarily fails to recognize the advantage associated with utilization of the same polymer, namely *formation of a firmer bond by fusion*.

In conclusion, Applicants submit that the present application is now in condition for allowance and notification to this effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



David P. Stitzel
Attorney of Record
Registration No. 44,360

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)